

Claims

- [c1] An image display device, comprising:
- a plurality of signal lines for supplying display signals;
 - a first group of pixel electrodes sequentially selected during a first horizontal scan period, the first group of pixel electrodes being connected to a specified signal line;
 - a second group of pixel electrodes sequentially selected during a second horizontal scan period after the first horizontal scan period, the second group of pixel electrodes being connected to the specified signal line;
 - a first group of scan lines for supplying scan signals for driving the first group of pixel electrodes during the first horizontal scan period; and
 - a second group of scan lines for supplying scan signals for driving the second group of pixel electrodes during the second horizontal scan period,
- wherein a specified group of scan lines among the second group of scan lines is selected during the first horizontal scan period to drive a specified pixel electrode among the second group of pixel electrodes, and any one scan line in the specified group of scan lines is not selected for a period from the selection of the speci-

fied group during the first horizontal scan period to the drive of the specified pixel electrode during the second horizontal scan period.

- [c2] The image display device according to claim 1, wherein the specified pixel electrode is driven in a same polarity during the first and second horizontal scan periods.
- [c3] The image display device according to claim 1, wherein the specified group of scan lines and the first group of scan lines share at least one scan line.
- [c4] The image display device according to claim 1, wherein respective signal lines supply display signals of the same polarity during a same horizontal scan period, and
signal lines adjacent to each other among the plurality of signal lines supply display signals of different polarities during the same horizontal scan period.
- [c5] An image display device, comprising:
m pieces of pixel electrodes sequentially driven from first to m-th timings (m: natural number of 2 or more) during a first horizontal scan period, the m pieces of pixel electrodes being connected to a specified signal line;

other m pieces of pixel electrodes sequentially driven at the first to m -th timings during a second horizontal scan period after the first horizontal scan period, the other m pieces of pixel electrodes being connected to the specified signal line; and
a group of scan lines selected for driving the other m pieces of pixel electrodes during the second horizontal scan period,
wherein a specified group of scan lines selected at n -th timing (n : natural number from 1 to m) among the group of scan lines during the second horizontal scan period is also selected during the first horizontal scan period.

[c6] The image display device according to claim 5,
wherein selection timing for the specified group of scan lines during the first horizontal scan period is timing other than the n -th timing during the first horizontal scan period.

[c7] The image display device according to claim 5,
wherein the specified group of scan lines includes scan lines for supplying scan signals for driving and controlling the m pieces of pixel electrodes driven during the first horizontal scan period.

[c8] The image display device according to claim 5,
wherein at least one scan line among the specified group

of scan lines is not selected from the first timing to (n-1)-th timing during the second horizontal scan period.

[c9] The image display device according to claim 5, wherein selection timing for the specified group of scan lines during the first horizontal scan period is the n-th timing, and the specified group of scan lines is different from the scan lines for supplying the scan signals for driving the m pieces of pixel electrodes at the n-th timing during the first horizontal scan period.

[c10] A scan line drive circuit, comprising:
a plurality of output terminals connectable to a plurality of scan lines; and
a signal output unit for outputting signal rows composed of a plurality of signals to the respective output terminals,
wherein the signal output unit outputs the signal rows to plural groups of the output terminals simultaneously during one horizontal scan period, shifts the output terminals one by one for each horizontal scan period to output the signal rows to other groups of output terminals, and
outputs a group of signals outputted to a specified output terminal among the groups of output terminals at

first timing during a specified horizontal scan period to a specified output terminal at second timing during another horizontal scan period after the specified horizontal scan period, and
outputs a signal different from the group of signals to the specified output terminal for a period from the first to second timing.

[c11] A pixel drive method, comprising:
a first step of selecting and preliminarily charging a specified pixel electrode during a first horizontal scan period; and
a second step of sequentially selecting and charging groups of pixel electrodes including the specified pixel electrode during a second horizontal scan period after the first horizontal scan period,
wherein the specified pixel electrode maintains a potential applied in the first step until selected in the second step.

[c12] The pixel drive method according to claim 11,
wherein the pixel electrodes are arranged in matrix, and pixel electrodes having a same pixel structure are arrayed on a same column,
other groups of pixel electrodes different from the specified pixel electrode are sequentially selected and charged during the first horizontal scan period, and

a pixel electrode among the other groups of pixel electrodes is selected as the specified pixel electrode in the first step, the pixel electrode being arrayed on a column different from that of pixel electrodes driven at same timing as timing when the specified pixel electrode is preliminarily charged.

[c13] An image display device, comprising:
a signal line for supplying a display signal;
a plurality of scan lines for supplying scan signals; and
plural sets of pixel electrodes, each set being composed of pixel electrodes A and B connected to the common signal line and driven by a combination of selection for two adjacent scan lines among the scan lines during each horizontal scan period,
wherein, during a first period in one horizontal scan period, the two adjacent scan lines among the scan lines are selected and one set of the pixel electrodes A and B is driven, and
during a second period, one of the two scan lines is selected, the pixel electrode B of the one set of pixel electrodes is driven, and other two scan lines shifted by two lines from the two scan lines are selected to drive pixel electrodes A and B of another set.

[c14] The image display device according to claim 13, further comprising:

output buffers connected respectively to input ends of the scan lines,
wherein three adjacent output buffers are controlled by control signals different from one another, and
a pulse signal having a time width for four horizontal scan periods is sequentially transmitted to each of the output buffers for each horizontal scan period.

[c15] The image display device according to claim 13,
wherein the plurality of pixel electrodes are arranged in matrix,
the pixel electrodes A and B of a same set are located in a same row, and a drive polarity thereof is inverted, and
any of drive polarities of the pixel electrodes A and drive polarities of the pixel electrodes B are inverted from each other, the pixel electrodes A and the pixel electrodes B being located on rows adjacent to each other, respectively.

[c16] An image display device, comprising:
a signal line for supplying a display signal;
a plurality of scan lines for supplying scan signals; and
plural sets of pixel electrodes, each set being composed of pixel electrodes A, B and C connected to the common signal line and driven by a combination of selection for three adjacent lines among the scan lines during each horizontal scan period,

wherein, during one horizontal scan period, a first group of scan lines composed of at least two lines among the three adjacent scan lines is selected, the pixel electrode A among one set of the pixel electrodes is driven, and a second group of scan lines shifted by two lines from the first group of scan lines is simultaneously selected to drive a pixel electrode A of another set.

[c17] The image display device according to claim 16, wherein output buffers are connected to input ends of the scan lines, respectively, three adjacent output buffers are controlled by control signals different from one another, and a signal row composed of a first pulse having a time width for three horizontal scan periods and a second pulse having a time width for one horizontal scan period is sequentially transmitted to each output buffer for each horizontal scan period, the second pulse propagating at an interval for one horizontal scan period from the first pulse.

[c18] An image display device, comprising:
a signal line for supplying a display signal;
a plurality of scan lines for supplying scan signals; and
plural sets of pixel electrodes, each set being composed of pixel electrodes A, B and C connected to a same signal line and driven by a combination of selection for three

adjacent lines among the scan lines during each horizontal scan period,
wherein, during one horizontal scan period, a first group of scan lines composed of at least two lines among the three adjacent scan lines is selected, and the pixel electrode A among one set of the pixel electrodes is driven, and
in the three adjacent scan lines, a second group of scan lines different from the first group of scan lines is selected to drive the pixel electrode B of the set of pixel electrodes, and a third group of scan lines shifted by one line from the first group of scan lines is selected to drive a pixel electrode A of another set.

[c19] An image display device, comprising:
a signal line for supplying a display signal;
a plurality of scan lines for supplying scan signals; and
plural sets of pixel electrodes, each set being composed of pixel electrodes A and B connected to the common signal line and driven by a combination of selection for two adjacent lines among the scan lines during each horizontal scan period,
wherein, during one horizontal scan period, a first group of scan lines composed of two adjacent lines among the scan lines is selected to drive one set of the pixel electrodes A and B, and simultaneously, a second group of

scan lines shifted by four lines from the first group of scan signals to drive pixel electrodes A and B of another set.

[c20] The image display device according to claim 19, wherein the plurality of pixel electrodes are arranged in matrix, the pixel electrodes A and B of a same set are located on a same row, and a drive polarity thereof is inverted for every two rows.

[c21] The image display device according to claim 19, wherein output buffers are connected to input ends of the scan lines, respectively, three adjacent output buffers are controlled by control signals different from one another, and a signal row composed of a first pulse having a time width for two horizontal scan periods and a second pulse having a time width for two horizontal scan periods is sequentially transmitted to each output buffer for each horizontal scan period, the second pulse propagating at an interval for two horizontal scan periods from the first pulse.

[c22] An image display device, comprising:
a plurality of scan lines for supplying scan signals; plural systems of output control lines;
a plurality of output buffers allocated and connected to

systems of the output control lines, respectively; and a control signal output unit for outputting control signals different from one another to the systems of the output control lines, respectively.

- [c23] The image display device according to claim 22, further comprising: a pulse signal supply unit for sequentially propagating pulse signals having a specified time width to the output buffers, wherein each pulse signal has a time width of m times (m : natural number) one horizontal scan period, and the output control lines are in the number of n systems (n : natural number of 2 or more) different from the number of m .
- [c24] A scan line drive circuit, comprising: a plurality of output terminals connectable to a plurality of scan lines, respectively; output circuits connected to the output terminals, respectively; and a control signal generation unit for generating control signals controlling outputs of the output circuits, wherein n types (n : natural number of 2 or more) of the control signals are generated, and the n types of control signals are supplied to n pieces of the output circuits, respectively.

[c25] The scan line drive circuit according to claim 24, further comprising:
a plurality of shift registers connected to the output circuits, respectively, and connected one another in a cascaded manner;
a clock signal generation unit for generating clock signals driving the plurality of shift registers; and
a signal row generation unit for generating signal rows to be sequentially propagated to the plurality of shift registers,
wherein each signal row has a time width of m times (m : natural number) the clock signal, and the m is larger than the n .

[c26] The scan line drive circuit according to claim 24, further comprising:
a plurality of shift registers connected to the output circuits, respectively, and connected one another in a cascaded manner;
a clock signal generation unit for generating clock signals driving the plurality of shift registers; and
a signal row generation unit for generating signal rows to be sequentially propagated to the plurality of shift registers,
wherein each signal row has a time width of m times (m : natural number) the clock signal, and the m is smaller

than the n.